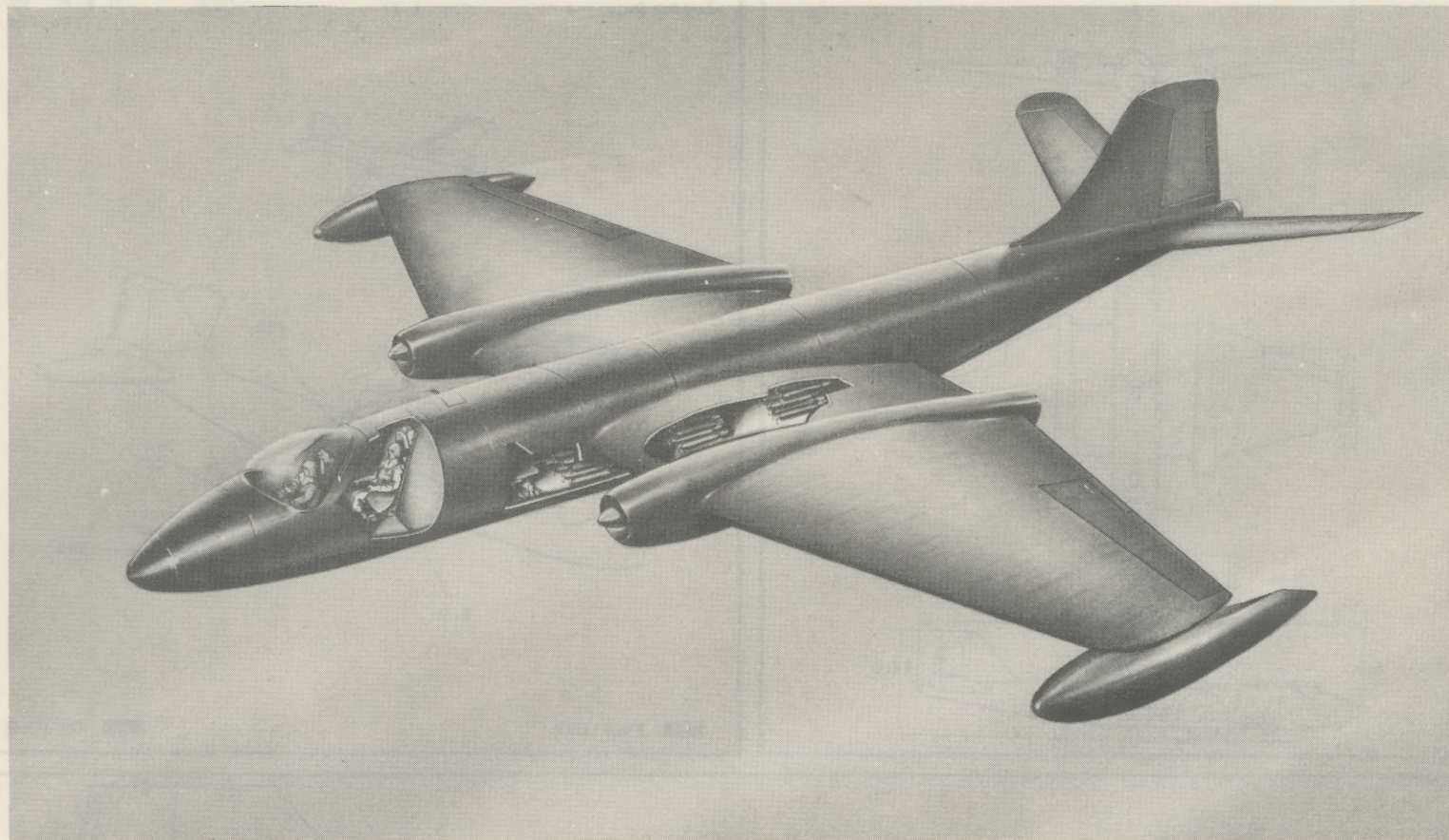


U N C L A S S I F I E D

SERVICE



Standard Aircraft Characteristics

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

RB-57A

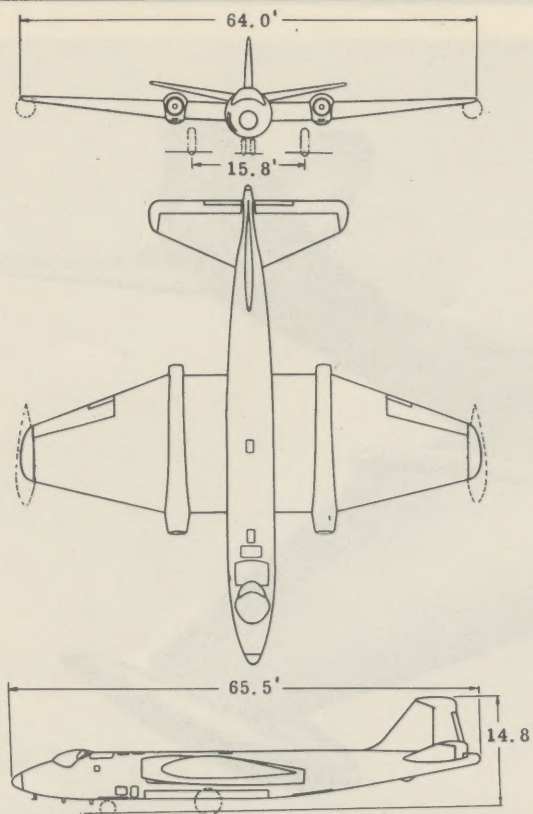
Martin

TWO J65-W-5
WRIGHT
or
TWO J65-BW-5
BUICK

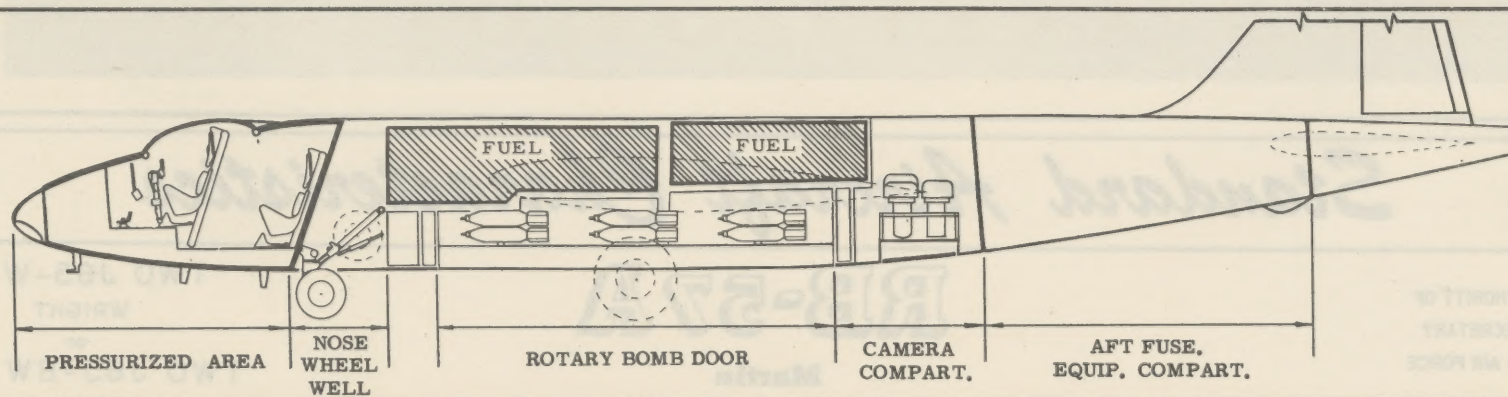
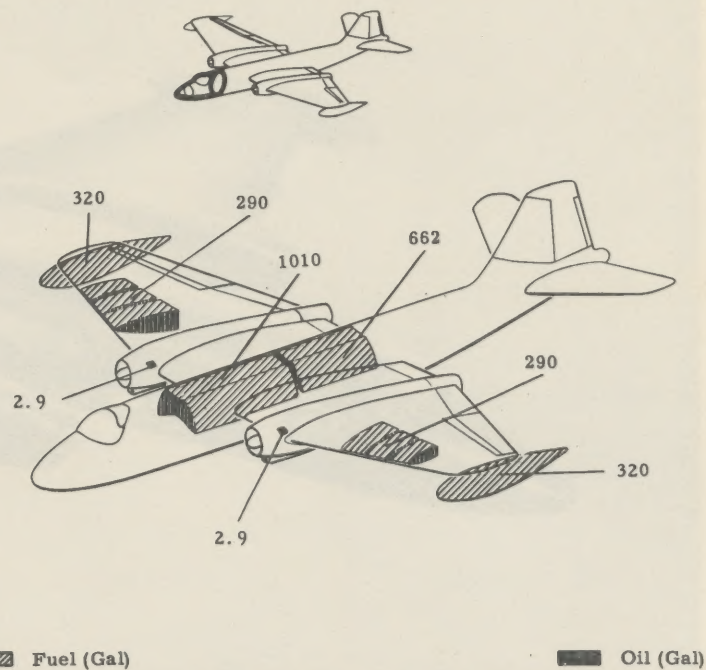
1 MAR 57

U N C L A S S I F I E D

RB-57A



Wing Area 960 sq ft Wing Section (root) ... R.A.E. 12%
 Aspect Ratio 4.27 (tip) ... R.A.E. 9%
 M.A.C. 194.6 in



RB-57A

UNCLASSIFIED

1 MAR 57

POWER PLANT

Nr & Model. (2) J65-W-5
 or
 (2) J65-BW-5
 Mfr. Wright/Buick
 Engine Spec Nr. 881-A
 Type Axial
 Length 126.3"
 Diameter 37.7"
 Weight (dry) 2750 lb
 Tail Pipe Fixed Area
 Augmentation None

ENGINE RATINGS

S. L. Static	LB	- RPM	- MIN
Max:	7220	- 8300	- 5
Mil:	7220	- 8300	- 30
Nor:	6350	- 8000	- Cont

DIMENSIONS

Wing
 Span 64.0'
 Incidence (root) 2°
 (tip) 2°
 Dihedral (ctr panel) 2°
 (outer panel) 4°21'
 Sweepback (LE outer panel) 13°33'
 Length 65.5'
 Height 14.8'
 Tread 15.8'

Mission and Description

Navy Equivalent: None

Mfr's Model: 272A

The principal mission of the RB-57A airplane is night photo-reconnaissance with provisions for high and low altitude operation and an alternate capability of day combat mapping.

The crew consists of pilot and photo-navigator located in a pressurized compartment; tandem seating is provided with the pilot's seat offset for improved visibility.

Ejection seats are afforded both crew members.

Special features include cabin pressurization, heating and cooling, removable leading edge type fuel tanks, finger-type dive brakes, partial split trailing edge wing flaps, cartridge-type engine starters, continuous fuel tank purging, variable incidence stabilizer, rotary type bomb bay door serving dual role of store carrier and bomb bay door. A transparent nose section is provided for visual observation.

Anti-icing of the transparent areas of the crew compartment is accomplished by an electrically heated element and a chemical drying agent. A hot air system is utilized for defrosting transparent nose.

Development

Developed from the B-57A and Canberra

First Flight; Oct 53
 First Acceptance: Nov 53
 Production Completion: Oct 54

WEIGHTS

Loading	Lb	L. F.
Empty	24,751(A)	
Basic	25,353(A)	
Design	43,965	5.0
Combat	34,917	5.0
Max T.O.	48,847	4.0
Max Land.	41,000	

(A) Actual

* For Basic Mission

† Limited by space

‡ Limited by strength

F U E L

Location	Nr Tanks	Gal
Fus, Main*	1	1010
Fus, Aux	1	662
Wg, outbd	2	580
Wg, drop.	2	640
	Total	2892

Grade JP-4
 Specification MIL-F-5624A

OIL

Engine 2 (tot) 5.8
 Type Synthetic
 Specification Mil-O-6081

*Self-Sealing

B O M B S

Nr	Class (lb)
21 Flash Bombs (*M-120)	164
208 Foto Flash Cart. (M-112**)	1
or	
80 Foto Flash Cart (**M-123)	7
4 Foto Flash Cart. Eject. (**A-6)	1
or	
4 Foto Flash Cart. Eject. (**B-4)	7

* Bomb Door

** Integral Wing

T-1 Bomb Sight Head is utilized for lining up photographic runs.

C A M E R A S

Nr	Type	Lens
Forward Station		
2	*K-37	12"
	or	
2	**K-38	24"
Aft Station		
1	†K-37	12"
	or	
1	‡T-11	6"
*Low altitude night reconn.		
**Day photography		
† High and medium altitude night reconn.		
‡ Day topographic IMC capability		

ELECTRONICS

UHF Command AN/ARC-27
 Marker Beacon AN/ARN-12
 Radio Compass AN/ARN-6
 Interphone AN/AIC-10
 IFF AN/APX-6A
 Radar Beacon Set AN/APW-11A
 Indicator Group AN/APA-90
 Shoran Navigational-Bombing System S-4
 Radar Set (Altimeter) AN/APN-22

Loading and Performance—Typical Mission

C O N D I T I O N S			BASIC MISSION		LOW ALT	HIGH SPEED	HIGH SPEED	FERRY RANGE
			NIGHT	DAY	NIGHT RECONN	HIGH ALT-NIGHT	LOW ALT-NIGHT	NIGHT
			I	II	III	IV	V	VI
TAKE-OFF WEIGHT		(lb)	48,847	44,825	48,847	48,847	48,847	45,229
Fuel at 6.5 lb/gal (grade JP-4)		(lb)	18,798	18,798	18,798	18,798	18,798	18,798
Payload (flash bombs)		(lb)	3618	None	3618	3618	3618	None
Wing loading		(lb/sq ft)	50.9	46.6	50.9	50.9	50.9	47.1
Stall speed (power off)		(kn)	103	99	103	103	103	99
Take-off ground run at SL	①	(ft)	3900	3200	3900	3900	3900	3300
Take-off to clear 50 ft	①	(ft)	4750	4000	4750	4750	4750	4150
Rate of climb at SL	①	(fpm)	4800	5280	4800	4800	4800	5225
Rate of climb at SL (one engine out)	①	(fpm)	1100	1280	1100	1100	1100	1260
Time: SL to 20,000 ft	①	(min)	5.3	4.6	5.3	5.3	5.3	4.7
Time: SL to 30,000 ft	①	(min)	9.6	8.1	9.6	9.6	9.6	8.2
Service ceiling (100 fpm)	①	(ft)	43,000	44,800	43,000	43,000	43,000	44,600
Service ceiling (one engine out)	①	(ft)	21,700	24,900	21,700	21,700	21,700	24,500
COMBAT RANGE	③	(n. mi)	—	—	—	—	—	2230
COMBAT RADIUS	③	(n. mi)	1050	1110	872	996	823	—
Average cruise speed		(kn)	430	428	428	448	448	431
Initial cruising altitude		(ft)	40,300	42,100	40,300	41,500	41,500	41,900
Target speed	②	(kn)	448	448	500 ④	448	500 ④	—
Target altitude		(ft)	45,700	47,700	S. L.	45,700	S. L.	—
Final cruising altitude		(ft)	50,000	50,000	50,000	50,650	50,900	50,000
Total mission time		(hr)	4.91	5.22	4.28	4.51	3.71	5.21
COMBAT WEIGHT		(lb)	34,917	34,759	35,112	34,852	35,122	28,881
Combat altitude		(ft)	45,700	47,700	S. L.	45,700	S. L.	50,000
Combat speed	①	(kn)	464	460	500	464	500	462
Combat climb	①	(fpm)	910	625	7150	920	7150	800
Combat ceiling (500 fpm)	①	(ft)	48,350	48,400	48,200	48,350	48,200	51,400
Service ceiling (100 fpm)	①	(ft)	50,700	50,800	50,600	50,750	50,600	53,500
Service ceiling (one engine out)	①	(ft)	34,100	34,200	34,000	34,050	34,000	38,400
Max rate of climb at SL	①	(fpm)	7180	7210	7150	7200	7150	8700
Max speed at 4500 ft	① ④	(kn)	529	529	529	529	529	529
Basic speed at specified alt	①	(kn/ft)	473/35,000	473/35,000	500/S. L.	473/35,000	500/S. L.	474/35,000
LANDING WEIGHT		(lb)	28,881	28,462	28,286	28,881	28,286	28,881
Ground roll at SL		(ft)	2230	2200	2200	2230	2200	2230
Total from 50 ft		(ft)	2950	2900	2900	2950	2900	2950

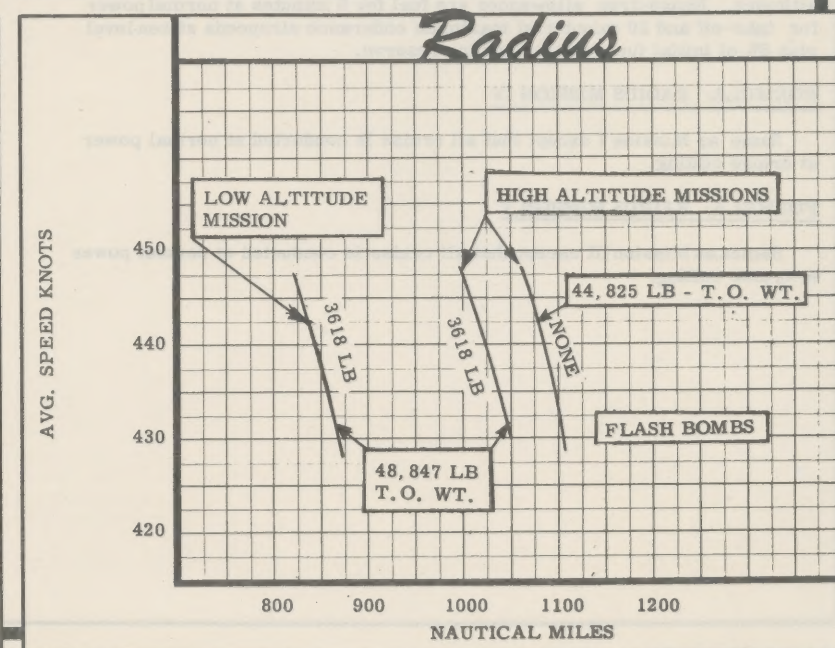
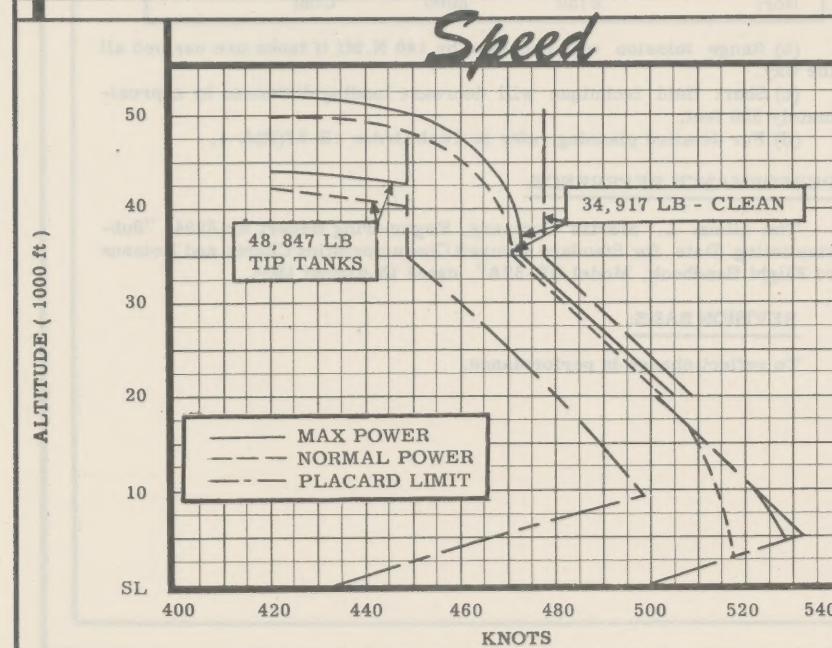
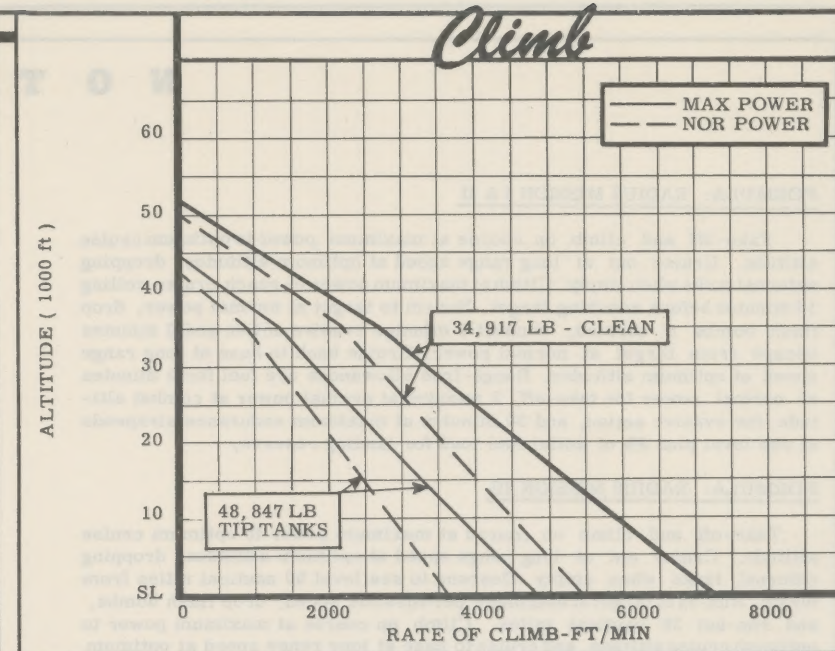
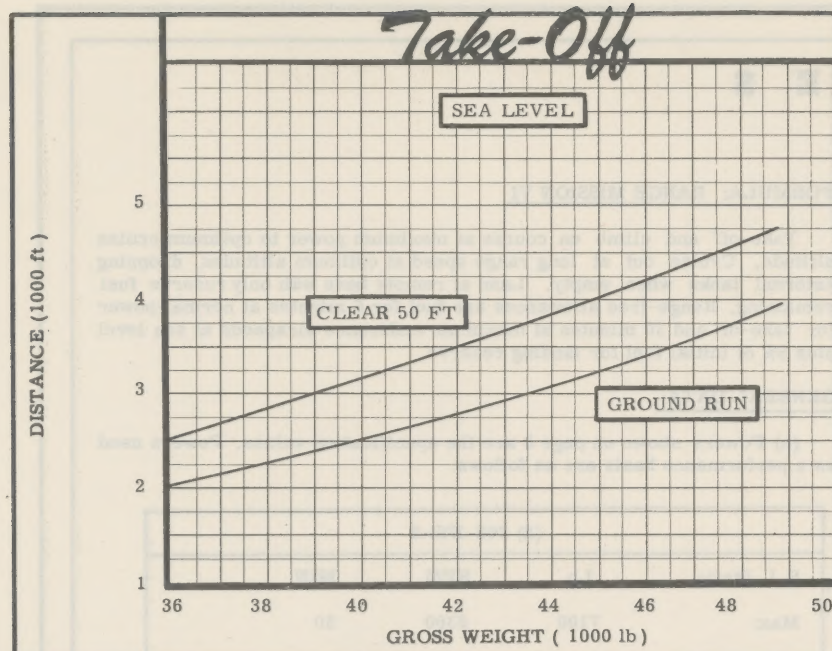
NOTES

- ① Maximum power
 ② Normal power
 ③ Detailed descriptions of RADIUS and RANGE missions given on page 6

④ Limited by structure

PERFORMANCE BASIS:

- (a) Data source: USAF Phase IV Flight Test
 (b) Performance is based on powers shown on page 6



N O T E S

FORMULA: RADIUS MISSION I & II

Take-off and climb on course at maximum power to optimum cruise altitude. Cruise out at long range speed at optimum altitudes, dropping external tanks when empty. Climb at maximum power to reach cruise ceiling 15 minutes before reaching target. Run-in to target at normal power, drop flash bombs if carried, conduct 2 minutes evasive action and 8 minutes escape from target at normal power. Cruise back to base at long range speed at optimum altitudes. Range-free allowances are fuel for 5 minutes at normal power for take-off, 2 minutes at normal power at combat altitude for evasive action, and 30 minutes at maximum endurance airspeeds at sea level plus 5% of initial fuel load for landing reserve.

FORMULA: RADIUS MISSION III

Take-off and climb on course at maximum power to optimum cruise altitude. Cruise out at long range speed at optimum altitudes, dropping external tanks when empty. Descend to sea level 50 nautical miles from target. Run-in to target at maximum permissible speed, drop flash bombs, and run-out 50 nautical miles. Climb on course at maximum power to optimum cruise altitude, and cruise to base at long range speed at optimum altitudes. Range-free allowances are fuel for 5 minutes at normal power for take-off and 20 minutes at maximum endurance airspeeds at sea level plus 5% of initial fuel load for landing reserve.

FORMULA: RADIUS MISSION IV

Same as Mission I except that all cruise is conducted at normal power at cruise ceiling.

FORMULA: RADIUS MISSION V

Same as Mission III except that all cruise is conducted at normal power at cruise ceiling.

FORMULA: RANGE MISSION VI

Take-off and climb on course at maximum power to optimum cruise altitude. Cruise out at long range speed at optimum altitudes, dropping external tanks when empty. Land at remote base with only reserve fuel remaining. Range-free allowances are fuel for 5 minutes at normal power for take-off and 30 minutes at maximum endurance airspeeds at sea level plus 5% of initial fuel for landing reserve.

GENERAL DATA:

(a) Powers shown on page 3 are the specification values. Powers used as a performance basis are as follows:

(2) J65-BW-5			
S. L. Static	Lb	RPM	MIN
Max:	7100	8300	30
Nor:	6150	8000	Cont

(b) Range mission will decrease by 140 N.Mi if tanks are carried all the way.

(c) Short field technique will decrease landing distances by approximately 500 feet.

(d) For detailed planning refer to Tech Order 1B-57(R)A-1.

PERFORMANCE REFERENCE:

The Glenn L. Martin Company, Engineering Report Nr 8284, "Substantiating Data for Standard Aircraft Characteristics Charts and Reissue of Flight Handbook, Model RB-57A", dated 15 August 1956.

REVISION BASIS:

To reflect change in performance.